

THE CLAIMS

What is claimed is:

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1. An injector filling assembly, comprising:

an cartridge housing configured for receiving a first end of a cartridge that has a chamber containing a medicament and first and second ends, the first end including a seal for sealing the medicament in the chamber, and the second end including a stopper sealingly disposed in the chamber;

an adapter associated with the cartridge housing and configured for coupling the chamber to an injector for transferring the medicament to the injector; and

a post associated with the cartridge housing in a post position from which movement towards the adapter is substantially prevented, wherein the post is configured such that positioning of the second end of the cartridge in a first position with respect to the post and of the post in the post position causes the post to displace the stopper towards the seal by an amount sufficient to overcome any adhesion between the chamber and the stopper for permitting filling of the injector from the chamber and for substantially preventing said movement of the cartridge past the first position.

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2. The filling assembly of claim 1, wherein the post is configured such that movement to the first position is insufficient to expel a substantial amount of the medicament from the chamber with the seal opened by the opening member.

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3. The filling assembly of claim 1, further comprising a cap having an engaged association with the cartridge housing in an engaged position from which movement therebetween past the engaged position towards the adapter is substantially prevented, wherein the post extends from the cap in the post position and the cap is configured for substantially preventing said movement of the cartridge past the first position.

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4. The filling assembly of claim 3, wherein the cap is configured and dimensioned for receiving the second end of the cartridge such that movement of the second end into the cap causes the post to displace the stopper towards the seal by said amount sufficient to reduce or eliminate adhesion between the chamber and the stopper.

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5. The filling assembly of claim 3, wherein the cap and the adapter housing are configured such that the engagement thereof causes sufficient displacement of the stopper for purging an amount of any air contained in the cartridge with the seal opened prior to the attachment to the injector.

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6. The filling assembly of claim 1, wherein the post is disposed and configured such that the engagement of the cap with the adapter housing causes the post to move the seal to the first position.

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7. The filling assembly of claim 1, wherein the adapter comprises a cartridge opening member configured for opening the seal to permit extraction of the medicament therefrom.

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8. The filling assembly of claim 7, wherein the adapter comprises a needle disposed and configured for penetrating the seal for said opening of the seal.

9. The filling assembly of claim 1, wherein the adapter comprises a wall that defines a wall opening in fluid communication with the cartridge opening member to create a pathway for drawing the medicament out of the chamber.

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10. The filling assembly of claim 1, wherein the adapter is configured for connecting the cartridge to the injector to allow the medicament to flow from the chamber into the injector.

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11. The filling assembly of claim 1, wherein the cartridge housing and post are associated by a threaded connection for engaging to each other with the post in the post position.

12. The filling assembly of claim 1, wherein the adapter is configured for engaging the first end of the cartridge.

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13. The filling assembly of claim 12, wherein the adapter comprises a frangible retaining member configured for engaging and retaining the first end of the cartridge and for breaking upon removal of the cartridge from the adapter housing for inhibiting repeat uses of the filling assembly.

14. The filling assembly of claim 13, wherein the frangible retaining member comprised a plurality of resilient tabs configured for flexing outward upon insertion of the medicament cartridge into the adapter and flexing inward about the first end of the cartridge to engage and retain the cartridge.

15. The filling assembly of claim 1, wherein in the post position the post and cartridge housing are fixed together.

10 16. The filling assembly of claim 1, wherein the post is associated with the cartridge housing in the post position for allowing the medicament to be aspirated from the chamber into the injector.

17. The filling assembly of claim 1, wherein the housing defines a window for
15 viewing at least a portion of the medicament cartridge.

18. The filling assembly of claim 1, further comprising the cartridge.

19. The filling assembly of claim 18, wherein the medicament chamber
comprises a first chamber containing a lyophilized medicament, a second chamber containing a
reconstituting fluid, a dividing member separating the first and second chambers, and a bypass
channel for providing fluid communication between the first and second chambers upon
movement of the dividing member, wherein fluid pressure generated by movement of the stopper
causes movement of the dividing member.

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20. An injection device, comprising:
the filling assembly of claim 1; and
a needle free injector comprising:
needle free syringe assembly comprising:
30 a nozzle member defining a fluid chamber and having a proximal end configured and dimensioned for mating with the second side of the adapter and a distal end, and

a housing having a proximal end connectable with the distal end of the nozzle member and a distal end;

a trigger assembly;

5 an energy source operatively associated with the trigger assembly so that movement of the trigger assembly activates the energy source to move the plunger in a first direction to expel medicament from the fluid chamber when the adapter is not connected to the needle free syringe assembly and movement of the plunger in a second direction draws medicament out of the cartridge chamber and into the fluid chamber when the adapter is connected to the needle free syringe assembly.

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21. The injection device of claim 20, wherein the injector and filling assembly comprise threaded portions configured for connecting to each other.

22. A method of filling an injection device, comprising:

15 associating the adapter with a cartridge that has a chamber containing a medicament and sealed by a sealing member to associate the chamber with the injector;

associating an adapter with an injector that is configured to inject the medicament into a patient;

20 displacing the sealing member within the chamber with a displacement member that is associated with the adapter; and

transferring the medicament to the injector from the chamber with the displaced sealing member by providing aspiration from the injector.

23. The method of claim 22, wherein:

25 the sealing member comprises a stopper sealingly disposed in the chamber;

the displacement member comprises a post and is configured for overcoming adhesion between the stopper and the chamber to facilitate the aspiration of the medicament.